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SEP 02 2011

Mr. Michael Machado, Executive Director
Delta Protection Commission
14215 River Road
Post Office Box 530
Walnut Grove, California 95690

Re: Department of Water Resources' review of the Draft Economic Sustainability Plan for the Sacramento – San Joaquin Delta (August 9, 2011)

Dear Mr. Machado:

The Department of Water Resources (DWR) is providing our comments to the Draft Economic Sustainability Plan for the Sacramento – San Joaquin Delta (August 9, 2011) (Draft Plan). We are also providing a few comments to an earlier version, dated July 21, 2011, of the draft plan.

We are surprised and concerned about the tone, analytical approach, technical validity, and conclusions of the Draft Plan. The authors make a narrow and over-simplified interpretation of State Legislation which supports a rigid analytical approach that appears to be designed to maintain the status quo of the Delta. As a result, actions which have the potential to significantly contribute toward meeting the goals of providing an improved Delta ecosystem and a more reliable water supply are evaluated as having large and unacceptable impacts to the Delta economy. This approach, along with the technical inadequacies and resulting conclusions of the Draft Plan, produces information which is not useful to the Delta Stewardship Council and does not meet the directive of the Legislature.

Specifically, the Draft Plan is premised upon the interpretation that there is a "legislative requirement to "protect and enhance" the value of the Delta". The authors of the Draft Plan interpret this further to mean that the economic value of agriculture in the Delta must be maintained and enhanced. This approach is an incorrect interpretation of the legislation. The law states:

> "*The commission shall develop, for consideration and incorporation into the Delta Plan by the council, a proposal to protect, enhance, and sustain the unique cultural, historical, recreational, agricultural, and economic values of the Delta as an evolving place, in a manner consistent with the coequal goals.*" (Water Code section 85301(a).

social, economic, and natural forces. It also does not present a plan that is consistent with the coequal goals of improving water supply reliability and protecting, restoring and enhancing the Delta ecosystem.

Many statements and conclusions in the Draft Plan are presented as facts but have no references cited or associated analysis. In addition, the information and references chosen to be included in the Draft Plan appear to be selected to support a given conclusion. For example, the authors choose to extensively reference information and analysis presented in the Department's Delta Risk Management Strategy (DRMS) study. However, the information is subjectively endorsed or rejected. In numerous instances, the authors contend that data in DRMS is incorrect or "appears" to be incorrect without offering any scientific or technical support. In certain instances, language from the final Independent Review Panel's review of the DRMS study is taken out of context and mischaracterizes facts.

The Draft Plan minimizes the threats to the Delta of subsidence, climate change, sea level rise, and earthquakes. It provides an over-optimistic assessment of the current status of Delta levees and the amount of work and associated costs needed to raise and maintain levees to a level of protection deemed acceptable by the authors. Estimates of these costs are unsubstantiated. The Draft Plan appears to overly estimate future agricultural values and associated impacts by including the high-value output of wineries and canneries outside the Delta in the valuation of Delta agriculture; and by assuming an increase in high-value truck crops when trends indicate a decrease in these crops.

The Draft Plan includes speculations on the potential water quality levels associated with an isolated conveyance system that appear to be designed to alarm readers. For example, Table 13 shows potential reductions in agricultural revenues in the south Delta for a range of salinity increases in irrigation water of up to 200%. Within the draft text, the potential reductions are associated with the Bay-Delta Conservation Plan (BDCP); The BDCP will meet the water quality standards established by the State Water Resources Control Board. As such, the salinity increases shown are not realistic but would lead a reader to conclude these are impacts associated with the BDCP. In addition, the values in the table are from an analysis which does not accurately represent crop responses to salinity increases and, as a result, overly estimates revenue reductions. Presenting such an unrealistic scenario and supporting it with invalid analyses is counter to the purpose of the Draft Plan; that being to inform, not inflame.

The attached comments are from DWR staff with expertise in the technical areas of flood management, Delta levee maintenance and improvements, Delta emergency response, economics (general and Delta-specific), and Delta water quality. These staff are available to the contributing authors of the report and to staff of the Business Forecasting Center of the University of the Pacific to respond to questions regarding DWR reports and analyses and the attached comments. Dave Mraz, Principal Engineer

DWR reports and analyses and the attached comments. Dave Mraz, Principal Engineer for the Delta Levees Program, should be contacted regarding the Delta Risk Management Strategy reports, the Delta emergency response plan, and comments related to Delta levees and flood response. He can be reached at (916) 651-7017 or dmraz@water.ca.gov. Ray Hoagland, Research Manager within our Division of Statewide Integrated Water Management, should be contacted to discuss any comments involving economics. His contact information is (916) 653-6785 or ray@water.ca.gov. Katherine Kelly, Bay-Delta Office Chief, may be contacted at (916) 653-1099 or kkelly@water.ca.gov regarding other comments.

If you would like to discuss this subject further, please contact Dale Hoffman-Floerke, Deputy Director, at (916) 653-8045.

Sincerely,

for Mark W. Cowin,
Director

Attachments

cc: Report authors via email to: espcomments@pacific.edu

Comments by the California Department of Water Resources

On the Draft Economic Sustainability Plan for the Sacramento-San Joaquin Delta (version dated August 9, 2011)

General comments

Many statements throughout the plan are presented as facts without citing the source. It is frequently difficult to distinguish between editorial comments made by the authors and information based on data or other sources.

Although the Economic Sustainability Plan (ESP) is a draft report, this existing level of incompleteness and inaccuracy raises serious concerns about the ESP, its content and its objectivity.

The following caveat was added to this version, "This document is under development. Additional content will be added and further revisions made as research and consultation continues. Some figures and tables are under development. Citations and references are incomplete and being developed on a constant basis." In this latest review, we found numerous instances of incorrect report names and missing references.

In this version of the ESP, it appears that the authors moved the inaccurate information to Appendix D rather than perform scientific research to rectify the shortcomings. Staff's recommendation is that the Plan be rewritten more and provide verifiable scientific support for any arguments they may decide to put forth.

The Plan should consider areas required to be considered for inclusion into the primary zone. Public Resources Code (PRC) 29773.5 requires the DPC to consider changes to the primary zone, specifically Rio Vista, Isleton, Bethel Island, Brannan-Andrus Island, the Cosumnes/Mokelumne floodway, and the San Joaquin/South Delta lowlands. The DPC has drafted a report that proposes Bethel Island be included in the primary zone, but despite its population and infrastructure and possible inclusion in the primary zone, Bethel Island is not mentioned in the text of the Draft Plan.

The ESP should consider including recommendations regarding the boundaries of the Primary and Secondary Zones, as is anticipated by the Delta Protection Commission (DPC). In a January 14, 2011 letter to the State Senate and Assembly, the DPC stated, "It is expected that the ESP will discuss and make recommendations regarding the Primary and Secondary Zones as it relates to economic sustainability of the Delta; therefore, the Commission accepted the final report, but deferred making recommendations for changes to the Primary and/or Secondary Zones pending completion of the Economic Sustainability Plan." (http://www.delta.ca.gov/res/docs/P1%20Study%20Report%20(3).pdf)

General Staff Comments Related to DRMS

As related to DRMS, while the Draft ESP chooses to make extensive use of information and analysis presented in the DRMS study, the authors however seem to endorse or reject information from DRMS based on subjective biases. In numerous instances, the authors contend that data in DRMS is incorrect or "appears" to be incorrect without offering any scientific or logical support. In certain instances, language from the final Independent Review Panel's review is taken out of context and subsequently mischaracterizes facts.

Specific Comments

Cover page: No author or authors are listed for this draft report. This detracts from its credibility.

Executive Summary

Page i, Paragraph 4, Line 3-5

Concerning the statement, "In economic terms, there is near consensus that a minimum requirement is to maintain the economic value of the entire Delta economy in the future." This sentence should be removed. Economic analysis and consideration do not seek to maintain economic value, but rather assess the consequences associated with events (natural or man-made) to inform decision making. Furthermore, near consensus is a relative term and not clear.

Page i, Paragraph4:

Concerning the statement, "The concept of economic sustainability and the objective to "protect and enhance the unique cultural, recreational, natural resources, and agricultural values of the California Delta as an evolving place," can be interpreted in different ways. In economic terms, there is near consensus that a minimum requirement is to maintain the economic value of the entire Delta economy in the future." This is an unsubstantiated and subjective statement establishing a performance standard for the economic sustainability of the Delta. To have any credibility, the specifics of who was involved in developing this consensus and the circumstances surrounding its development should be described.

Page ii, Paragraph 2:

The statement that there is a “legislative requirement to “protect and enhance” the value of the Delta” is an over-simplification that leads to an incorrect interpretation of the legislation. The California Water Code states:

> Coequal goals means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. (Water Code section 85054)

Page ii, Paragraph 3, Line 4

The area of the Delta is between 737,000 and 738,000 acres. However, not all of this area is land; this area includes the thousands of acres of open water in the Delta.

Page ii, last paragraph

Concerning this statement, “The Primary Zone economy is export-oriented and created jobs and income fare in excess of the population and workforce that resides in the Primary Zone.” The Primary Zone Delta economy is *not* export-oriented, as explained in detail in subsequent comments.

Page iv, Paragraph 1

The phrase in the last sentence, “less than 20 percent of all farmland,” should be changed to less than 20 percent of all agricultural land.” Otherwise, it is inaccurate.

Page iv, Paragraph 2

Concerning, “Tomatoes and wine grapes [grown in the Delta] have even greater importance to the regional economy because these two crops are tightly linked to high value added manufacturing in the region.” This is not correct. Those two crops are not “tightly linked to high value added manufacturing in the region,” as discussed in subsequent comments.

Page iv, Paragraph 4

The phrase, “70 percent of crop revenue” should be changed to “70 percent of gross crop revenue.”

Page iv, Paragraph 5

The text should make clear that these are the multiplied economic impacts, and include both the direct, indirect, and induced impacts of Delta agricultural production.

Page iv, Paragraph 6

The economic impacts shown in this paragraph are highly inflated, for reasons explained in subsequent comments.

Page iv, Footnote 1

This tool is the same one used in regional economic development assessments done by the USACE and DWR.

Page vii, Paragraph 2, line 1-2

What was the need to update the levee lengths? Were surveys done to indicate other maps were out of date and required an update? Who created the map and where did the supporting data come from? Without this supporting data, all succeeding statements that refer to and rely on this map are unsubstantiated.

Page vii, Paragraph 2, line 7

What constitutes a "core levee" and who is determining them?

Page vii, Paragraph 2, line 9-10

"...core levees need to be maintained and enhanced by the State..." Explain why. What makes the State responsible for maintaining and enhancing non-project levees?

Page vii, Paragraph 3

This paragraph paints a too bright and optimistic picture of the condition of the Delta's levees. A more accurate portrayal can be found in recent documents from the DRMS program and the Public Policy Institute of California.

Page vii, Paragraph 3, line 1-3

Concerning this statement, "Of this 460 miles of levees, only about 50 miles clearly fall below FEMA's Hazard Mitigation Plan (HMP) "standard" and 100 miles or more are already at or about the Corps of Engineers Delta-specific PL 84-99 standard." These statements are unsubstantiated. What data was used to make this determination?

Page vii, Paragraph 3, line 7-8

Concerning this statement, "If effectively used, funds currently in the pipeline should bring the Delta levees close to achieving this goal." This is an unsubstantiated guess

Page vii, Paragraph 3, line 9-12

Although many levees have been improved in recent years, largely through State funding, many levees have not.

The claim that historic data is obsolete is false, dangerous, irresponsible, and completely unsubstantiated.

Page vii, Paragraph 4, line 4

Recommend deleting "following earthquakes". Preparedness also includes dealing with an event prior to failure. A better way would be to just say, "improve preparedness".

Page viii, Paragraph 1, line 3-4

Concerning this sentence, "…further widened at selected locations to allow the construction of new tourist and recreational facilities out of the statutory floodplain. Advocating the construction of levee encroachments is irresponsible.

Page viii, Paragraph 1, line 4-5

Concerning this sentence, "Improvement of core levees to this higher standard would cost in the order of $1 to 2 billion, …" This figure is unsupported speculation.

Page viii, Paragraph 3

The statement "would be positive effects" is debatable and should be removed.

Page viii, Paragraph 4, line 1

Recommend replacing "the availability and right to use sufficient quantities of water" with "water of sufficient quality and quantity".

Page viii, last paragraph

Concerning the statement, "Thus, economic sustainability requires the value of Delta agriculture to be sustained and enhanced in the future." This assertion is based on an incorrect understanding of the concept of "economic sustainability." The authors of the February 2011 report done for the Delta Stewardship Council by the UC Ag Issues Center have a correct understanding of this concept, and reached a different conclusion. The AIC report states:

> The environmental and agricultural challenges facing the Delta continue unabated. The dilemma of how to move water from Northern California to Southern California demands a long term solution that does not aggravate environmental and agricultural concerns in the Delta itself. Delta agriculture also faces implications of climate change that are as challenging as for any other region. The result is that the acreage devoted to agriculture in the Delta is likely to decline over the long term because costs to rebuild the elaborate levee system are simply too high. The result is likely to

be a small but more sustainable Delta agriculture that can be a vibrant contributor to the local and statewide rural and agricultural economy.[1]

Page ix, Paragraph 3

Concerning the statement, "On the agricultural side, supporting the high-value processing tomato and wine grape crops is critically important to the regional economy because of the local value-added manufacturing industries associated with these crops …": The regional manufacturing industries which utilize the processing tomato and wine grape output of the Delta could effectively replace most of the lost Delta production of these crops with increased purchases of these crops from other parts of the region. Please refer to comments on Chapter 6, below, for more details on this subject.

Page xi, Paragraph 1

Concerning the statement, … "will undoubtedly generate extreme pressure to change operations and increase the amount of fresh water conveyed through the canal. In this case, agricultural losses in the Delta would rise significantly, possibly as high as $200 million per year." These claims are speculative, and are not supported by the analysis contained in the draft report. They are based on a hypothetical, "worst-case scenario", that is not likely to occur.

Pages xi, Paragraphs 4 and 5; and xii, Paragraphs 1 through 3

Concerning the text on "Habitat Proposals" found in the last two paragraphs of Page xi and the first three paragraphs of Page xii: The economic impacts shown for these proposals are greatly inflated, for the reasons set forth in subsequent comments on the text concerning this subject that is found in the main body of the draft report.

Page xiv, First full bullet

Improving levees beyond the PL 84-99 standard is not consistent with the goals of the primary zone of the Delta nor with statewide treatment of level of flood protection in rural

[1] Evaluations of Policy Alternatives to Benefit Agriculture in the Sacramento-San Joaquin Delta of California; February 17, 2011; Daniel A. Sumner and John Thomas Rosen-Molina; University of California Agricultural Issues Center.

areas, in that this could encourage urbanization and intensification of property and lives behind new "100-yr" insurable levees and expose the state to greater risk. The suggestion of a cost-benefit analysis however, is really what should be used to justify future flood facility improvements.

Chapter 1, Introduction

Page 8, Paragraph 2

The Delta Reform Act of 2009 establishes four goals for the Delta ESP. The authors of the draft report state, “In addition to the goals stated in legislation, the following goals have also been established as critical to support economic sustainability in the Delta.” The text then lists eight additional goals. The source establishing these 8 additional goals should be referenced.

Page 8, Paragraphs 4 and 5

First, concerning the phrase, “evaluating whether proposed actions to satisfy the coequal goals are consistent or conflict with the objective [of] protecting and enhancing the Delta.” There is no legislative requirement to “protect and enhance” the Delta. The California Water Code states:

> Coequal goals means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. (Water Code section 85054)

The key phrase in the above section is “the Delta as an evolving place.” Profound changes are coming to the Delta. Governments are charged with protecting and enhancing the unique values of the Delta while it evolves over time. As the UC AIC 02/11 report authors state, “The result is likely to be a small but more sustainable Delta agriculture that can be a vibrant contributor to the local and statewide rural and agricultural economy.”

Second, concerning the statement, “In economic terms, there is near consensus that a minimum requirement is to maintain the economic value of the entire Delta economy in the future.”. This is an unsubstantiated and subjective statement establishing a performance standard for the economic sustainability of the Delta. To have any credibility, the specifics of who was involved in developing this consensus and the circumstances surrounding its development should be described.

Page 11, Paragraph 4, Lines 5-6

Concerning this sentence, “However, the boundaries of what constitutes the Primary Zone or a given community can change based on the data source being utilitzed.” The boundary of the Primary Zone is fixed based upon the legal definition (PRC 29728). This boundary may be updated in the near future based on PRC 29773.5. However, the boundary does not change based on the data source being utilized. Where other boundaries (e.g., zip code boundaries, Census tracts) do not correlate with the boundary of the primary zone, an interpolation is required.

Chapter 2, Overview of the People and Economy of the Delta

Page 14, Paragraph 2

Concerning the claim, “However, when the volatile agricultural employment changes (likely due to contract labor trends) are excluded from the analysis, the Primary Zone also added jobs …” Trends in contract labor are not the sole, or even primary, cause of agricultural employment changes in the Delta. The vague expression, “in recent years,” is no substitute for specifying the period of analysis. A loss of farm jobs in the Delta could indicate an agricultural economy already in decline, or else one that is changing to crops which are less labor-intensive.

Page 14, Paragraph 4

The authors should explain they are using the term “exports” differently than most people, including most economists, usually use the term. By exports, the authors appear to mean shipments of goods and services outside the region being analyzed by an Input-Output model, not the more common use of that term, which involves goods and services sent to a foreign country. Relatively little of the Delta’s agricultural or other production is sent to foreign countries.

Page 21, Paragraph 3

Concerning the statement: “there are 1.826 million jobs in the five-county Delta region (Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties)”: A small part of the

Legal Delta lies in Alameda County. Also, the authors should make it clear if their "five-county Delta region" includes only the parts of those five counties which lie within the legal Delta, or if it includes all of those five counties.

Page 21, Paragraph 4

The report claims there are "approximately 4,360 jobs in the Primary Zone, which suggests total employment of nearly 6,500 jobs (approximately 3 percent of the Legal Delta) after the adjustment for undercounting." What proportion of the Delta's population lies within its Primary Zone?

Page 24, Section 3.2

The text should indicate that the term "exports" is not being used here as most people understand that term – as shipments of goods or services between countries.

Chapter 3, Review of Key Policies and Planning Processes

It would be helpful to include a map identifying the area covered by each General Plan. In accordance with PRC 29759(b)(2), it would be helpful to specifically highlight recommendations on continued socioeconomic sustainability of agriculture and its infrastructure.

Consider including local Integrated Regional Water Management groups.

Page 25, Paragraph 1

Concerning the phrase, "the Delta, hub of the California water system": There is no one "California water system." Instead, there are many different water systems in our State. They are not operated as a centralized, coordinated system.

Page 25, Paragraph 2

This paragraph confuses the federal Central Valley Project with the State Water Project, and mixes the two separate projects together.

Page 36, Paragraph 2

Concerning the statement, “The [Delta Reform Act of 2009] … requires agricultural water supplies to prepare and adopt water management plans by 2012.” The word “supplies” should be changed to “suppliers.” And it should be noted that agricultural water suppliers below a certain size are exempt from this provision.

Page 37, Paragraph 3

Concerning the statement, “The Delta Plan will … reduce reliance on the Delta …” This phrase should be changed to “…reduce reliance on water exports from the Delta …”

Page 37, last paragraph

It is not accurate to claim that, “Northern California is the source of the majority of the state’s water supply, and this water moves through the Sacramento–San Joaquin Delta.” Much of northern California’s water supply is used to recharge groundwater basins in northern California, is consumptively used in northern California, or flows into waters on the North Coast or North Bay, via streams and rivers that do not pass through the Delta.

Chapter 4: Flood, Earthquake and Sea-Level Rise Risk Management

Overall comment on Chapter 4, which runs from Page 39 to Page 71: This chapter does not spend enough time evaluating the long-term sustainability of the Delta’s levees in the face of sea level rise, continued subsidence, global climate change, and seismic risk. It does not contain an adequate discussion of the financial feasibility or Benefit-Cost Analysis of significantly upgrading the Delta’s levees.

Chapter 4 presents a more optimistic portrayal of the actual conditions of the Delta’s levees than is found in recent studies by the DRMS team and the Public Policy Institute of California. The draft report paints a brighter picture of the Delta’s levees than is contained on Page 10 of the Fourth Staff Draft of the DSC’s Delta Plan:

> Over a century ago, and with little or no engineering analyses and construction tools, Delta residents began to build an intricate levee system to channel water and reclaim land, which converted hundreds of thousands of acres of seasonally flooded wetlands

> into fertile agricultural land. … Despite ongoing maintenance of the levee system, communities that have evolved behind these levees face the ever-present threat of flooding and, in some cases, catastrophic flooding.
> Agricultural practices on some Delta islands have led to average subsidence of 12 to 15 feet below sea level, and in some areas up to 25 feet below sea level, creating tremendous pressure on the levees to act as dikes—to hold back water constantly rather than only during peak flow periods. The cost of maintaining, improving, or repairing these levees in some cases may be more than the assessed value of the use of the land they protect (Sumner et al. 2011). This creates an uncertain future for Delta agriculture and for the associated Delta economy and those residents who depend upon it.

The Draft Delta Plan's depiction of the Delta's levees is the more realistic portrayal.

Finally, Chapter 4 does not contain much discussion of the risk of a cascading series of levee failures, where the failure of one Delta levee during a storm or high-water event or following an earthquake acts to significantly increase the chances of a subsequent failure of a nearby levee, and so on.

Page 39, Paragraph 1

The following statement is misleading: "Taken together, these two policies necessarily mean that the State is committed to maintaining and enhancing the Delta levees in more or less their present configuration." The two cited State policies might, in some cases, call for the rebuilding of some Delta levees to new, improved configurations. In other situations, certain Delta levees could be deliberately breached, or would not be repaired following a storm-induced failure, so as to comply with these and other State and federal policies. This is what has happened on Prospect Island, and at the Cosumnes River Preserve.

Page 39, Paragraph 2
(same comment for page 50, Paragraph 3 and page 210, Paragraph 6, and Page 218, Paragraph 4)

The values for levee miles in the Delta are unsubstantiated. Based on a review of Figure 8 on page 44 (see discussion below) it appears that the ESP may be using incorrect levee classifications to derive their values. The calculations described on page 42 incorrectly subtract the project levees in the primary zone twice, resulting in an artificially low value for

the miles of nonproject levees in the primary zone. (This same error is repeated on page 50.)

Counting the miles of levees in the Delta is somewhat complicated and the assumptions should be clearly stated. The ESP states that it did not count the nonproject levees along flooded islands, but other nonproject levees appear to not be counted, such as the nonproject levee along the Contra Costa Canal by Hotchkiss Tract.

Page 39, Paragraph 1

Recommend using the term "flood protection" in lieu of “flood control”.

Page 39, Paragraph 2, Lines 1-2

Concerning this sentence, “For the purposes of this study, an up-to-date map of Delta levees was created. This map serves as the basis for an updated tabulation of levee lengths, …” What was the need to update the levee lengths? Were surveys done to indicate other maps were out of date and required an update? Who created the map and where did the supporting data come from?

Without this supporting data, all succeeding statements that refer to and rely on this map are unsubstantiated.

Page 39, Paragraph 2, Line 8

The text uses the term "core" levees without a definition of "core". Please provide a definition.

Page 39, Paragraph 3, Line 3-7

While the text is reasonably correct when it states that in 1982 the Department and USACE agreed that the goal for Delta levees was the PL84-99 levee standard, the DWR has recently published its intent that the HMP geometry is now supported for all Delta islands. Levee improvements beyond this geometric standard will require economic justification.

Page 39, Paragraph 3, Line 7- 9

This text sets up the expectation that the Delta levees will be raised to the PL84-99 standard by 2016, when funds from Prop 84 and 1E are fully expended. It leaves out the fact that Delta levees settle and will have to be maintained over the long term. Also, the statement does not address changes in hydrology or sea level rise.

Page 40, line 1 – missing word, "… component of …"

Page 40, Paragraph 1, Line 4-5

Concerning the sentence, "Improvement of core levees to this higher standard would likely cost in the order of $1-2billion." This is an unsupported speculation.

Page 40, Paragraph 2, Line 10

States that the DWR Technical Memorandum was released for public review on July 15, 2011. In fact this document has not been released to the public as it is still undergoing internal DWR review and review by Delta engineers.

Page 41, Figure 8

Where did the supporting data come from? Who made the determination of urban versus non-urban non-project levees? How was the determination made?

This figure does not accurately depict the project and non-project levees in the Delta. The hundreds of miles of non-attributed levees appear to be overlooked or occasionally mistakenly classified as non-project levees. Examples of errors include the missing non-project levee along Prospect Island, Veale Tract, Bixler Tract, Pico Naglee, and Egbert Tract, a missing project levee along the deepwater ship channel near Prospect Island, and extra non-project levees along Sargent Barnhart, Shima, Rio Blanco, and Shin Kee, and the mislabeled levees along the Delta Cross Channel. Also, it is unclear if the nonproject levee along Hotchkiss and Van Sickle were intentionally left off of this figure.

Page 42, Table 1

This table is incomplete and contains errors and misspells several districts. Some of the mileages may be incorrect. The source of the data for this table should be cited for easy reference. Also, consider including a column for non-attributed levees. The table provides a listing of levees, and leaves out at least several districts, including Prospect Island, McCormack-Williamson Tract, and Liberty Island.

Who made the determination of urban versus non-urban non-project levees? How was the determination made?

Column C: There are some state maintenance areas showing up here. Consider adding a column to indicate management as being local or state.

Column 1: "Core" need to be defined as it is not a standard name used by federal, state, and most local flood managers.

Page 44, Paragraph 1, Line 2-3

Concerning this statement, "However, the rates of subsidence have decreased markedly in recent years." This statement needs qualification and supporting data. Is this statement equally true Delta-wide? If not, where is it true and where is it not true?

Page 44, Paragraph 1, Line 4

Concerning this statement, "Reasonably current land surface elevations interpreted from DWR's 2007 LiDAR surveys are shown in Figure 12." Interpreted by who?

Page 45, lines 1-4 – Written characterization of magnitude of subsidence gives different impression than figure 12.

Page 45, (Above Figure 10)

Perhaps another graph showing a histogram of elevation relative to cumulative area (not including levees) would better inform risk analysts. From a risk perspective, the fact that a levee gets wet is not what should be considered. The consideration should be if the land use behind the levee gets wet. Under this case, the depth of inundation becomes very important.

A true economic analysis will need to consider parcel by parcel elevations and flood depths to support detailed flood damage assessments. There is value in some agency assembling this data. If it is not readily available, then this plan should recommend it be collected on a periodic basis.

Page 46, Figure 12

Map should state data source. This figure is illegible.

Page 47, Paragraph 1

The text makes a statement that many miles of Delta levees are actually in quite good condition. "Even without survey measurements, touring the Delta by boat during a high-water event reveals that while the condition of the levees is variable, most levees appear to have adequate freeboard." – It is completely irresponsible for a State commission to make this statement unless and until they have studied the engineering facts of the Delta islands and related them to expected conditions of hydrology, meteorology, climate change, and sea level rise. If they have completed the necessary studies, they should publish the peer-reviewed results. The challenge is that it only takes one low point for landside erosion to compromise the levee leading to a breach that could flood an entire island.

March 2011 did not coincide with the annual coincidence of the perigeen and perihelion tides (around Jan. 2), thus there was easily a foot or three of additional active tidal prism available in the estuary to accommodate what was a high frequency (low return period) event. In other words, photos from 2006 would be much more appropriate.

Page 47, Paragraph 2,

This section talks about limited height levees and observes that they should not be included in the statistics for the Delta. This is a good point and will be incorporated into DWR analyses

A bit of history as to why some Delta levees are height limited and a time line showing changes in heights over time might be useful in advocating for future levee improvement and channel maintenance programs ... or even additional bypass / setback programs designed to accommodate large flood volumes.

Need to date the memo. Give it a proper citation and continue to use the citation similar to how a peer reviewed journal article would address the external data / opinion.

Page 47, Paragraph 3

DWR has completed a Flood Control System Status Report, which has been reviewed by the USACE and LMAs, which provides a qualitative assessment of the various failure modes and overall performance of Central Valley levees based on detailed ULE and NULE data. This report should be the basis for any state level report / finding.

We agree with the three goals for improving levees: 1) increase resistance to vertical accelerations (due to seismic loading); 2) raise for most likely future high water due to climate change (sea level rise); and 3) increase cross-sections to allow native vegetation on the water side. There are new technologies to identify lateral movement that also could be incorporated into a design criteria.

Page 47, line 30 – missing word, "… is beyond …"

Page 47, Paragraph 4

The Draft Plan states that the *Paterno* Decision confirmed the State's responsibility for Delta Project levees. The *Paterno* decision, in fact, had nothing to do with Delta Project levees, but rather a specific Project levee in Yuba County. The Project levees in the Delta are covered by Water Code Sections 8370, 12642 and 12828. Water Code Section 8370 states that it is the responsibility, liability and duty of reclamation districts, levee districts, municipalities and other public agencies within the Sacramento River Flood Control Project to maintain and operate the works within the boundaries or jurisdiction of such agencies. Water Code Section 12642 states that is the responsibility and duty of the county, city, state agencies or public district affected to maintain and operate flood control and other works and to hold and save the State free from damages. Finally, Water Code Section 12828 states that the State cannot expend any funds for any flood project until a public agency other that the State flood board has assumed the obligations to maintain the project and hold the State harmless for any claims that may arise.

In *Paterno*, there was no evidence that the local flood control agency had ever executed a hold harmless agreement with the State. However, in the Delta, many if not all Project levees are covered by assurance agreements, which allocate responsibility to the local flood control agency.

Page 48, Section 3.1.2 Paragraph 3

Notes that DWR is undertaking investigations of riverine and Delta levees. The NULE and ULE programs of DFM are looking at only some Delta levees, not all of them.

The Draft Plan states that as a result of the *Paterno* decision, DWR is undertaking a major investigation of Central Valley and Delta levees. In reality, the fundamental driving forces behind these levee investigations is the creation of the FloodSAFE California Initiative and the voters' adoption of the Proposition 1E and 84.

Page 49, Figure 13

This figure shows levee types in the Delta and many of the line symbols are wrong. For example, the levee on the east side of the Yolo Bypass is not an urban levee. There are several other examples of similar errors.

Page 50, Paragraph 2

Provide a reference. DWR issues Tech memos frequently.

Page 51, Figure 14

The basis for these rankings should be clearly identified. Why is Liberty Island ranked high for having critical facilities when it has been flooded for many years? Since the Yolo Bypass is intentionally flooded during high Sacramento inflows, why is it ranked relatively high for critical facilities? Why is the area that includes the city of Tracy considered to have less infrastructure value than some of the islands in the primary zone?

It appears that each island is given the same ranking, even if the island is split into Reclamation Districts separated by non-attributed dryland levees. Some of these dryland levees (e.g., the one separating Upper and Lower Jones Tract) may have an opening such that all Districts on the island flood if one does, but others may effectively separate the island into separate components. If a non-attributed levee is sufficient to prevent flooding of one District should the other District flood, consider evaluating such Districts separately.

This figure provides a convenient prioritization of many Delta islands and should be supplemented with economic data that shows the impact of each island on the Delta economy and on the State economy. This figure is important in that islands not showing are judged to be insignificant to State interest and should not be covered by State grant funds.

An analysis method to judge which among the islands shown are most critical would be helpful.

Page 54, Paragraph 1, Lines 19-21

This states that berms can be used to partially address earthquake loading. It recognizes that deformations will occur, but, states that they are unlikely to fail. The author should provide the supporting data to show the earthquake characteristics, foundation and embankment make up, and the other parameters used in determining adequacy. If the analysis has not been completed, the assertion should be removed from the text.

Page 55, Paragraph 2, Lines 7-10

Concerning this sentence, "…it is commonly believed that water surface elevations in much of the Delta are strongly influenced by tides and that 300- or even 500-year water surface elevations are only a foot or two higher than 100-year elevations." Commonly believed by whom?

Page 55, Paragraph 2, Lines 10-13

"effectively provide 500-year flood protection" is an unsubstantiated claim

Page 55, Paragraph 2, Lines 13-15

Concerning the statement, "Building to this standard would increase the cost marginally over the cost of complying with the Delta-specific PL84-99 standard." How much is "marginally"?

Page 56, Paragraph 2, Lines 5-7

Concerning the sentence, "While it is the policy of the State to plan for 55 inches of sea-level rise by the year 2100, the probability of that magnitude of sea-level rise is actually very small". According to whom?

Page 57, Paragraph 1, Line1

To advocate for the construction of encroachments on levees is inappropriate.

Page 57,
Concerning: "However, although funding of the subventions program continued at a relatively low level, financing was never put in place to implement this more significant levee-improvement plan." Need to explain "relatively low level". Recommend quantifying the amount of funds provided.

Page 58, paragraph 3

The Draft ESP implies that the *Paterno* decision led to the funding provided through Propositions 1E and 84. However, there is no reference in either of the Propositions or the ballot materials relative to the *Paterno* decision or any other court decision.

Page 61, Paragraph 2, Line1

Concerning this sentence, "This study concludes that the core Delta levees can be made robust under seismic loadings for a total of $1-2 billion." There is no data to support this claim.

Page 61, Section 3.3.4

The statement on the status of the Delta Islands and Levees Feasibility Study is incorrect. Significant progress has been made up to date. The study recently completed conceptual measures that will be used to formulate alternatives for the study.

Page 61, Section 4.1, Line2

This text states: "Without detailed analysis, it seems clear that essentially all Delta levees should be improved to the PL84-99 standard." This DPC report should be a key document which provides the necessary detailed economic information to demonstrate the value to the State resulting from improving levees to specific standards. Additional text in the paragraph shows the consultant is aware of the DWR position that improvements beyond HMP must be justified by economics; yet the report provides no specific data.

Page 62, Paragraph 5, Line12

The Draft ESP implies that the State has the legal obligation to provide the entire Delta with PL 84-99 level of protection, by referencing the *Paterno* decision. However, neither State law nor the *Paterno* decision give any area a right to any particular level of flood protection. Nor is there sufficient funds available through Propositions 1E and 84 to achieve every flood control need within the State of California, much less the Delta. Appropriate flood improvements will be funded, as funds may be available and allocated, throughout the Central Valley and the Delta.

Page 63, Paragraph 1, Lines 1-2

Concerning this statement, "…'earthquake proof,' but they would reduce the probability of single or multiple failures from any cause to quite low levels, in the order of 1 percent per year or less." This statement is unsubstantiated.

Page 63, Paragraph 1, Lines 2-4

Concerning this sentence, "Levees improved to this new Delta standard would also provide a greater freeboard and wider crests allowing two-way traffic, which will enhance emergency response." To which new standard is the writer referring?

Page 64, Section 4.2

General Comment – This section on emergency response should recognize that the first response is made by the RD itself. They are the agencies that serve the interests of the island and have very significant capacity to declare emergencies, to contract for emergency services, to enter agreements with adjacent islands for support, in addition to stockpiling supplies, investing in communications, and participating with DPC, DWR, County OES, USACE, and others to understand priorities for emergency response.

Page 64, Paragraph 1, Line 1

Concerning this sentence, "As discussed above and in Appendix D, few if any levee failures actually occur without warning." Evidently the author is disregarding Jones Tract, the most recent catastrophic failure.

Page 64, Paragraph 1, Lines 3-5

Concerning this sentence, "…but the consequences of even a moderate-to-large earthquake that affects the Delta are more likely to be some slumping rather than immediate breaches. Even sunny-day failures may be preceded by signs of trouble." This unsubstantiated, anonymous opinion, if mistakenly believed to represent the truth, has the potential to impact the safety of many lives and billions of dollars worth of property. Again, Jones Tract; this statement does not reflect factual information.

Page 64, Paragraph 2, Bullets 1& 2

Each levee district has the ability to stockpile materials they believe are best suited to flood fight on their island and request reimbursement of up to 75% of the cost from the State. It would be helpful to have economic justification spelled out for this expense so as to make it easy for the RD to submit their claim and for the Department to support its payment.

Page 64, Paragraph 2, Bullet 4

This paragraph recommends monitoring for movement of Delta levees. The report should review the cost of completing this monitoring, its effectiveness, and show the economic value to the Delta and the State for implementing such a program.

Page 64, Paragraph 3, Lines 1-5

This paragraph states that improved federal, State, county and community coordination would be important in <u>preventing</u> failures. Without specific measures identified, it is very difficult for us to see how the prevention of levee failures would be improved with greater coordination between these agencies. The RD's are responsible for operation, maintenance, and improvement of their island's levees. This recommendation requires a greater understanding of the roles and responsibilities of the organizations involved with the levee system and what is required of each to economically sustain the existing system.

Page 64, Section 4.3

This ESP should provide methods to analyze the economic impacts resulting from making repairs to levee endangering incidents, up to and including levee breaches, and demonstrate the savings that result from early actions. Also, the DPC must realize that in many flood fights, protecting urban areas is the primary State interest and take priority over preservation of agricultural or industrial lands. This section states one appropriate role for DWR which is to consider responding to levee failures and island flooding after it occurs. What is missing is an economic evaluation or justification to demonstrate the savings to the State from taking a different course of action.

Page 65, Paragraph 1

This is incorrect. MWD has had its own studies and DWR through the URS team that worked on DRMS developed scenarios for DWR.

Page 66, Section 5, Paragraph 2, Lines 1-3

Concerning this sentence, “There is also some work being done on further development and implementation of emergency response facilities in the Delta for the 50 breaches/20 flooded islands scenario, but the details of this are unclear.” This program includes project levees in the secondary zone.

Page 66, Paragraph after point #3

The work was finished in 2007, and DWR will make this available if requested. The plan was not for a 50 breach / 20 island scenario, but instead a series of scenarios and is scalable, meaning it could be used to assist emergency response planning and operations for a single breach to multiple breaches. The point of 20- rock (the large rock) was to provide material for slowing the progression of a failure and the flooding of an island ... not to stop it, nor to be a permanent fix.

Page 67, Paragraph 2, Lines 2

Please add "with special State significance" between the words "levees" and "in".

Page 68, Table 4

Remove note at bottom of Table 4.

Page 69, Paragraph 3

Consider discussing the option of both direct and indirect reuse of dredged material as a potential cost-savings for projects. The Sacramento and Stockton deepwater ship channels may be deepened in the near future and this could be a potential source of inexpensive material for projects.

Page 69, Paragraph 3, Lines 9-10

Should cite source of the data.

Page 69, Paragraph 3

SAFCA's NLIP is running upwards of $700M ... and is far less than 100 miles, which would put a price tag of $7M/mile. The estimate of $1M/mile appears too low. It would help to provide a detailed engineering cost estimate for this improvement total. New projects would obviously cost much more.

Page 69, Paragraph 4, Lines 1-2

Concerning this sentence, “Improvement of critical non-project and non-urban levees to a higher Delta specific standard that will provide 200-year plus protection for floods, earthquakes, and sea-level rise…” This report proposed raising non-project and non-urban levees to a standard that will provide 200-year protection from floods. While this may appear desirable, it would increase development pressures on islands so protected. This report should discuss the economic impacts to islands, to the county, and to the Delta as a whole. Also, it would be appropriate to discuss the impact of additional development on the Delta as place.

Page 69, Paragraph 4, Lines 14-16

Concerning this sentence, “…it might be desirable to use a higher number like $2 billion. The main point is that the total cost would be $1-2 billion rather than $50 billion (obtained by multiplying 1,100 miles by $45 million per mile.” This is unsupported opinion by the author.

Page 70, Paragraph 1, Lines 11-13

Concerning this sentence, “These figures also assume that design and construction are executed by the local reclamation districts. If managed directly by DWR or USACE, these costs should be multiplied by a factor of as much as 2 or 3.” Unsubstantiated claim

Page 70, Paragraph 1, Lines 17-18

Concerning this sentence, “In addition, there are significant bureaucratic issues which add to the cost…” What are the significant bureaucratic issues?

Page 70, Paragraph 4, Lines 1-3
The $20 million figure is unsubstantiated. DWR can provide our annual Flood Operations and Flood Maintenance budgets, but they vastly exceed this number. The advantage of having a state focused organization be responsible for emergency response, is experienced gained in statewide events is more frequent and allows for a more dynamic and better trained response team. It also buffers an organization from economic downturns and loss of institutional knowledge due to retirement.

Page 70, Paragraph 5, Lines 2-3

What are the "in-kind contributions"?

Chapter 5: Framework for Analysis

Page 74, Paragraph 3

Concerning this section:

> Baseline Flood Control: All levees upgraded to PL 84-99. As discussed in Chapter 4, the upgrade of most Delta levees to PL 84-99 standards is a reasonable expectation with currently identified resources and on-going maintenance. Most levee breaks would be repaired to original conditions and islands restored.

The analysis is premised upon the assumption that "most levee breaks would be repaired to original conditions and islands restored" is very optimistic. It may not be in the State's best interest to assume the costs of repairing private levees and restoring to pre-flood conditions private land if a predominately rural Delta island were to flood due to a levee failure.

The authors of the February 2011 University of California Agricultural Issues Center (UC AIC) report to the Delta Stewardship Council concluded that:

> Substantial investments to rebuild levees are likely to be prerequisites for continued farming on vulnerable lands in the Delta. But relatively straightforward comparisons of land values and infrastructure costs indicate that it would be hard to justify spending public money to keep land in farming when the costs would be in excess of the value that farmers and landowners themselves place on the land.

Concerning the last sentence on Page 77

Recommend replacing the term, "low-value agricultural crops" with "lower-valued crops."

Page 78

The Draft ESP refers to negative impacts of not maintaining levees on some islands with low infrastructure value, but does not outline these costs

Page 78, Paragraph 1

Concerning this phrase, "Some other studies place Webb Island in the group of western islands critical for protecting through Delta water exports from salinity …" What are those studies? This August Draft ESP is not as well sourced and documented as it should be.

Page 78, last paragraph
Concerning, "As the Stewardship Council's third draft plan is written …" The DSC has released its fifth staff draft of the Delta Plan. The analysis in this draft report may be out-of-date.

Page 78

Concerning the section on “Regulatory Scenarios,”
The land use regulations concerning the Delta that are called for by State laws and enforced by State agencies can be used to promote the “economic sustainability” of the Delta, as well as to protect the welfare, health, and safety of Delta residents and visitors. Weakening these regulations, or creating increased exemptions from them, may benefit certain individuals. But such “reduced regulation” would not always help to ensure the economic sustainability of the Delta.

Page 79, Paragraph 4

Regarding the following statement: “The signs of [economic] stagnation within existing [Delta] communities are thought by some to be caused by excessive [government] regulation that discourages new investment”. This is an unsubstantiated conclusion.

Also, it is contrary to State policy to encourage urban development on flood-prone lands through relaxed land use regulation.

Chapter 6: Agriculture

Chapter 6,-General Comment

The Plan should place a greater emphasis on how different regions of the Delta are used for different types of agriculture. For example, all (or almost all) of the confined animal facilities are located within the existing secondary zone of the Delta in more upland areas of the Delta.

On Page 81:

Concerning, “Total cropped acreage in 2010 was 419,891 acres, not including approximately 38,000 acres of grazing land.” This compares to the 427,549 acres of Delta cropland in 2007, as reported in the preliminary results of the 2007 DWR Land Use Survey of the Delta. The DWR estimate excludes fallowed fields, but includes “native pasture” and “mixed pasture, partially irrigated.” Although the Delta ESP’s estimate of 2010 Delta cropped acreage is less than DWR’s preliminary estimate of 2007 Delta cropland, the 7,658

acre difference can easily be explained by the different years, and perhaps also by different definitions of cropland.

Concerning, "The top five Delta crops in terms of acreage are: 1) Corn, 2) Alfalfa, 3) Processing Tomatoes, 4) Wheat, and 5) Wine Grapes." The year or years upon which the estimates are based needs to be defined. Also, the text should explain that "corn" includes both grain corn, corn silage, and sweet corn.

Concerning, "Total crop value in 2009 was approximately $660 million dollars. Truck and vineyard crops account for 56% of crop revenues on 17% of acreage." A DWR study of Delta agriculture during the 2005-to-2009 period estimated the average annual gross crop revenue for the Delta to be about $657 million[2], expressed in 2009 dollars – virtually the same as the draft report's estimate for 2009. However, the DWR study estimated that the Delta's truck and vineyard crops accounted for an average of only $322 million (in 2009 $'s) per year during the 2005-09 period, or just 49 percent of average annual Delta gross crop revenue during that period. And the Delta acreage devoted to truck and vineyard crops constituted 19.1 percent of total Delta cropped acreage during the period.

Concerning, "The top five Delta crops in terms of value are: 1) Processing Tomatoes, 2) Wine Grapes, 3) Corn, 4) Alfalfa, and 5) Asparagus." The year or period for these rankings needs to be defined.

Concerning, "…$90 million in Delta animal and animal product revenue …" DWR's model of Delta agriculture estimates that annual gross revenues from animal agriculture in the Delta during the 2005-to-2009 period averaged $160 million, expressed in 2009 dollars. The draft report's $90 million estimate appears to be for only one year, 2009. Dairy and beef prices in California were unusually low in 2009, when compared to the past five years. This shows the danger of trying to paint a picture of agriculture in a particular region using data for only one recent year. Average prices and yields for many common agricultural commodities vary so much from year-to-year, usually more so than average crop acres, that it is generally preferable to use a three- or five-year average of the most recent available data when trying to describe agriculture in a particular region.

Concerning, "Across all of California, the economic impact of Delta agriculture is 12,360 jobs, $761 million in value added, and $1.5 billion in output." The text should emphasize that this is not the direct economic impact of Delta agriculture – it is the multiplied economic impact, including both direct, indirect, and induced economic impacts. Also, if part of the Delta's agricultural output is lost in the coming years, it does not mean there will be a comparable decrease in multiplied regional economic output. Some of the lost Delta

[2] From *The Value of the Agricultural Output of the California Delta, 2005 – 2009*; Draft DWR Paper; 1/26/11.

agricultural production – perhaps even most of it – would be offset by increased production of those agricultural commodities elsewhere in the larger region.

For instance, if regional wineries or tomato canneries have to reduce their purchases of wine grapes or processing tomatoes from the Delta, they would simply increase their purchases of those crops from farms in areas outside the Delta, including the parts of the Delta counties which lie outside the legal Delta. The large majority of the wine grape and processing tomato production in "the five Delta counties" comes from areas outside the legal Delta.

Concerning this phrase, "When regional canneries and wineries that are tightly linked to Delta crops are included with crop and animal production …" Most regional canneries and wineries are not "tightly linked to Delta crops." If they cannot purchase as many grapes or tomatoes from Delta growers as they have in past years, there are plenty of farmers and acres growing grapes or tomatoes in nearby regions from which to make purchases to offset most-to-all of their lost Delta production. To include the high-value output of wineries and canneries outside the Delta in the valuation of Delta agriculture is to inflate the true value of Delta agricultural production, and its multiplied economic impact.

Concerning, "The long-run land allocation forecast in the baseline scenario predicts a future increase in truck crops, and decreases in field and grain crops." This runs counter to the recent trends in crop acres for the six counties which contain the Delta. According to data from the County Crop Reports, field and grain crop acreage for the six-county Delta region increased by 17.4 percent between 2005 and 2009, while harvested truck crop acres for that region fell by 15.0 percent during that period.

Concerning, "This shift of 10% of land to higher value crops could lead to an approximately $115 million gain in crop revenues." This prediction is speculative. According to DWR's Delta Agriculture Valuation Model, the average Delta crop acreage during the 2005-to-2009 period was 463,000 acres. Ten percent of that would be 46,300 acres, which compares to an average of 60,000 acres of truck crops harvested each year in the Delta during the 2005-09 period. Such a large expansion (77.2 percent) of Delta truck crop acreage may be more than markets and the local infrastructure could absorb. A sharp increase in the supply of Delta truck crops could lead to a large fall in market prices for some of those crops, and serious economic losses for some of the Delta growers of those crops.

It does not appear that Delta growers enjoy a comparative advantage in producing high-value, labor-intensive truck crops, when compared to growers in other parts of California, or the nation or world. The vulnerability of much of the Delta to flooding also works against an

increase in the production of high-value truck crops in the Delta. These factors do not support a large increase in Delta truck crop production in the foreseeable future.

Finally, although a gain in gross crop revenues may result from a shift to higher-valued truck crops, those truck crops cost a lot more to grow, harvest, and sell than field and grain crops. They also tend to be riskier crops. The average net revenues or profits of many Delta farmers may actually fall if there is a large shift from field crops to truck crops in the Delta.

Concerning, "Tidal habitat restoration is anticipated to have the largest direct impact on agricultural revenues per year due to large acreage targets in high-value crop areas." Draft BDCP documents reveal the BDCP participants do not envision all, or even most, of the farmlands in any area of the Delta would be bought or put under "conservation and flood easements." Instead, the land or development rights for some of the farmland in some parts of the Delta would be purchased from *willing sellers*, so as to further the conservation aims of the BDCP. Although it is possible that certain circumstances would lead to a landowner selling farmland producing high-value crops, it is more likely the least-productive, less-valuable, most-threatened, least-sustainable farmland would be offered for sale or easements. The negative economic impacts of converting some Delta farmland to wildlife habitat or wildlife-friendly farming practices would thus be minimized.

Page 82, Paragraphs 3 and 4:

Regarding the following statements:

> Tidal habitat restoration losses range from $18 to $77 million annually with lower losses when restoration is targeted to Suisun Marsh.
>
> Natural Communities Protection losses are estimated to range from $5 to $43 million annually depending on targeting of high-value, permanent crops.

Losses to agricultural production near the upper ranges shown above are unlikely to occur. The proposed BDCP conservation and habitat programs involve purchasing land or development rights, or establishing conservation easements, from willing sellers. It is possible that certain circumstances would lead to a landowner selling and a BDCP-related program purchasing farmland producing high-value crops. However, it is more likely only the less-valuable, less-productive farmland in each of the target areas would be purchased or enrolled in these programs because program managers would seek out the most economical agreements meeting the objectives of their program. There will be no "targeting of high-value, permanent crops."

Page 83, line 24

NAIP imagery is aerial photography, not satellite imagery.

Page 83, next-to-last paragraph

Concerning “crop yield and price figures published in each county’s annual crop report were used” – The year or years associated with these yield and price figures should be specified.

Page 83, last paragraph:

Concerning, “Where available, this analysis drew from the UC Cooperative Extension studies conducted in Delta regions to calculate various costs and profits …” The UCCE has produced very few cost studies for the Delta in recent years – or even within the past 20 years. Also, by themselves, UCCE cost studies cannot be used to calculate expected profits for the growers of a particular crop in a certain region. One also needs gross revenue data for that crop and region for a recent year or period, from the County Crop Reports.

Page 84, first paragraph

Concerning, “Examples of major Delta crops from each category are outlined in Table 5 below, and the full crop category table is in Appendix E.” Table E1 of Appendix E lists acres for many crops for four of the Delta counties. But the table does not indicate for which year or time period the estimates apply. The table also does not indicate if the acreage estimates are for the entire county, or only the portion of the county which lies within the Delta. Finally, Table E1 does not indicate the source or sources of its data.

Similar faults can be found in Table E2.

Table E3 lists bananas and olives as deciduous crops grown in the Delta. DWR considers olives to be a subtropical crop, and bananas to be a tropical crop. Neither crop is classified as deciduous by DWR. Also, a DWR staff economist and two DWR Land and Water Use Scientists who recently surveyed Delta agriculture are not aware of any bananas being commercially grown in the Delta.

Page 84, Paragraph 3

Concerning, “The total size of available farmland in the Delta is 500,383 acres [in 2008] …” This compares with the 427,549 acres of Delta cropland in 2007, as reported in the preliminary results of the 2007 DWR Land Use Survey of the Delta. The DWR estimate excludes fallowed fields, but includes “native pasture” and “mixed pasture, partially irrigated.”

Page 84, last paragraph

Concerning, “This analysis places the total number of Delta acres in agricultural production in 2010 at 457,444 acres. Acreage includes all irrigated crops and pastureland, and grazing land.” This estimate exceeds the 427,549 acres of Delta cropland in 2007, from the preliminary results of the 2007 DWR Land Use Survey of the Delta.

Concerning Table 7, at the top of Page 85

This table has data for the Delta in parts of six counties, compared to the analysis earlier in this report, which ignored agricultural production in the part of the Delta that lies in Alameda County.

Concerning Table 8, on Page 85

This table lists cucumbers as the #13 crop in the Delta, in terms of acreage, with 3,737 acres in 2009. This appears to be an error. According to DWR’s model of Delta agriculture, there was an average of only 750 acres of cucumbers harvested in the Delta each year during the 2005-09 period. For 2009, the County Crop Reports for the six Delta Counties list only about 1,100 acres of cucumbers harvested in the entire six-county region which includes the Delta.

Page 86

The legend title is “Crop Category” but the legend items are not crop categories. Please add county boundaries because much of the tabular data is by county.

Page 87

Please add county boundaries to the map.

Page 88, Table 9

This table claims to show estimates of 2009 Delta gross crop revenues for six counties and seven broad crop categories. The text claims that Table 9 is based on "the acreage analysis described above," plus "yield and unit price reported in county crop reports", which are for 2009. Yet that acreage analysis for those crop groups and counties claims to be for 2010, not 2009. It is not technically valid to take acres estimates for 2010, and combine them with yield and price data for 2009, to produce a table showing 2009 Delta gross crop revenues. Also, the footnotes to Table 9 reveal that the acreage numbers for Contra Costa County are for the entire county, not just the part that lies within the Delta.

Page 88

The same crop categories from the map on the previous page are listed in Table 9, but they are called as "Crop Class". It would be better to use consistent titles.

Pages 84 through 90, Tables 6,7,8,9,and 10

It would be more informative to group similar tables together. Either put the tables for a single year together or similar tables for sequential years together. Similar data could also be grouped into a single table.

Page 90

What "soil quality" variable or variables were used to forecast the future allocation of crops? Was the NRCS SSURGO data used? Also, is there enough variability in slope within the Delta for that to be a determining factor in the future location of crops?

Page 90, Table 10:

This table purports to show 2009 Delta gross crop revenues or "value" for the "Top 20" Delta crops by value. We have compared the Table 10 values with the estimates from the DWR model of Delta agriculture, which are for the period 2005 to 2009, adjusted for inflation and expressed in 2009 dollars. The Table 10 values were "in the ball park" of the DWR model's estimates for 12 of the 20 crops. The following table provides value estimates for the eight crops for which there are substantial differences in the estimates from the two models:

Crop	Crop Value, in $ Millions	
	DWR	DPC
Alfalfa	90.8	66.0
Asparagus	38.2	50.1
Pears	25.9	36.7
Potatoes	19.8	28.6
Blueberries	5.4	25.3
Wheat	7.8	17.5
Cherries	6.9	11.5
Cucumbers	1.7	7.9

Some of the above differences are explained by different time periods: the most recent year with available data (DPC), versus the five most recent years with available data (DWR). Crop prices and yields for a region fluctuate a lot from year to year, and harvested acres also change. So, a single year may not provide a true, representative picture of recent agriculture in a region. Also, please note that in all but one of the eight cases where there is a substantial difference between the DPC versus DWR estimates, the DPC estimates of gross crop value are always higher.

Page 90, start of Section 3.1

Where in the Delta are the "over 6,000" fields located? Is each county's portion of the Delta represented in this sample?

Page 91

Table 11, on Page 91, shows a "Long-run Land Allocation Forecast" for the Delta. There is no common, agreed-upon definition of long-run, in the context of agricultural forecasts. The year that is represented by the Forecasted Land Allocation line of Table 11 needs to be specified. A forecast that might be unrealistic for 2020 might be plausible for 2030.

Whatever year is represented by the Forecasted Land Allocation of Table 11, we question the 96 percent increase predicted for Delta farmland growing truck crops. This is the opposite of the recent trend for the Delta region. The Delta Agriculture Valuation Model shows that harvested truck crop acres for the Delta Counties fell by 15.0 percent between 2005 and 2009. Harvested truck crop acres in the legal Delta also fell between 2005 and 2009.

The UC Ag Issues Center[3] report published February , 2011 and funded by the DSC states:

- Field crops and pasture covers most of the Delta agricultural acreage … Of the about 400,000 acres of irrigated farm land in the Delta, about one fourth has been used for corn, much of which is harvested as silage and used in the dairy industry. Alfalfa is the second most widely planted crop and irrigated pasture used by livestock is also important. These three livestock forage sources account for about half of the irrigated acreage in the Delta. Other important field crops are grains, such as wheat and sorghum, safflower and processing tomatoes, which together account for more than 100 thousand acres. [Page 3]

- The main policy point to emerge from this economic overview is that it is difficult to envision a wholesale shift in Delta agriculture away from field crops without drastic changes in incentives or growing conditions. [Page 5]

Another reason why we do not foresee a major long-run shift in the Delta away from field crops and towards higher-value truck, tree and vine crops is that before farmers and agricultural corporations will make the significant long-lived investments needed to implement such a shift, they must have confidence in the long-run sustainability of Delta agriculture. Here is what the recent UC Ag Issues Center report has to say on that subject:

- Recent assessments have called current management of the Delta environmentally and economically "unsustainable" (Lund et al. 2007, 2008). Moreover, physical factors on the horizon, such as land subsidence, changing runoff patterns, anticipated rises in sea level with climate change, and potential earthquakes, raise the risk of levee failure and severe economic losses. [Page 1]

- Any plans to encourage additional sources of revenue for Delta agriculture are predicated on successful response to threats from increased salinity and flooding. [Page 15]

[3] *Evaluations of Policy Alternatives to Benefit Agriculture in the Sacramento-San Joaquin Delta of California*; February 17, 2011; Daniel A. Sumner and John Thomas Rosen-Molina; University of California Agricultural Issues Center.

The UC AIC report done for the DSC concludes with this paragraph:

> The environmental and agricultural challenges facing the Delta continue unabated. The dilemma of how to move water from Northern California to Southern California demands a long term solution that does not aggravate environmental and agricultural concerns in the Delta itself. Delta agriculture also faces implications of climate change that are as challenging as for any other region. The result is that the acreage devoted to agriculture in the Delta is likely to decline over the long term because costs to rebuild the elaborate levee system are simply too high. The result is likely to be a small but more sustainable Delta agriculture that can be a vibrant contributor to the local and statewide rural and agricultural economy.

Page 92

On this map, it looks like the area planned for the Mountain House development could be converted into truck crops. Has consideration been given to the urban expansion expected within the Legal Delta?

Page 93

Figure 18 reference for salinity stations is not the correct figure number. Should be Figure 22.

Page 93, Paragraph 2

No references are cited, nor support given, to back up these two important statements: “The introduction of isolated conveyance facilities is expected to significantly increase salinity levels, particularly in the western and southern Delta. Rising salinity levels would lead to decreased yields for many sensitive crops, and alter the future agriculture landscape of the Delta.” The reader should not have to accept these claims on faith alone.

Page 93, Paragraph 2, Lines 2-3

Concerning this sentence, “Rising salinity levels would lead to decreased yields for many sensitive crops, and alter the future agriculture landscape of the Delta.” Some Delta crops are more sensitive to salinity than others, but at a certain point, increases in salinity could

impact crop yields for all crops in the Delta, not just sensitive crops (depending upon how much salinity increases in the Delta due to such factors such as outflow and sea level rise).

Page 93, Paragraph 5, Lines 3-4

Concerning this sentence, “The measurement value of the nearest station was used for fields without multiple monitoring stations within that radius.” The salinity of the irrigation water on a given field is impacted by the location of the water intake(s) on the island relative to the salinity monitoring locations, not the specific location of the field relative to the salinity monitoring locations. The analysis should be adjusted accordingly.

Page 95, Table 13

The crops in the table should be listed or grouped according to their sensitivity to salinity. For example the “Field Crop” group includes both dry beans and safflower which would not be impacted similarly by an increase in salinity. Also, this table should include a column showing the electrical conductivity corresponding to the percent increase in salinity.

Page 95, Table 13

Table 13 contains forecasts of revenue impacts but does not reference scientific studies or data that the model assumptions use that supports the impact on crops of changing salinity and, subsequently, substantiate revenue impacts. Also, the $775 billion shown as revenue with no change in salinity is suspect, as the report on page 81 says the 2009 crop revenue was $660 billion. What year does the $775 represent?

Page 95.
Units of salinity is confusing, on Page 9 it is stated the salinity is measured in uS/cm, however, on page 95 EC is used for salinity.

Page 95, Paragraph 2

The text and Table 13 refer to “potential salinity increases”, without indicating the likelihood of such increases. How plausible are the given salinity increases? Is a 100 percent increase predicted by a published study? Is the 200 percent salinity increase a “worst-case, doomsday scenario”?

Also, it should be emphasized that Table 13 shows forecasted crop allocations under certain hypothetical salinity increases; and that it does not predict that the building of an “isolated conveyance facility” or the adoption of a particular BDCP conservation or habitat restoration program would result in an increase in salinity throughout the Delta of 100 or 200 percent.

Pages 95-97.

The analysis presented in Chapter 4, Section 4.1, regarding potential impacts to crop revenues due to increases in salinity of irrigation water appears to be based upon a shifting baseline. Table 13 contains values of forecasted crop distribution changes in the south Delta due to increasing Delta salinity and the resulting annual crop revenues. A quick look at the table concludes that an increase in salinity of 25% produces a decrease in annual revenues of $28 M but it isn’t clear what the value is of the baseline salinity. In the subsequent discussion referencing the table, the increase in salinity is measured against different baselines. A correct technical analysis would have the baseline clearly defined and consistently used throughout the analysis.

Page 96, Paragraph 2

Concerning, “Thus, it is argued that the lack of standards combined with the necessity to pay for the over $12 billion facility through revenue from water sales will create pressure to operate the facility in a way that could lead to even larger increases in salinity.” This is an unsubstantiated statement that appears designed to alarm the reader. We do not believe this scenario is plausible, given how the CVP and SWP are being financed, and how a large bypass Delta water facility to support the CVP and SWP would likely be financed. The SWP’s Delta Water Charge was determined based on the contracted water quantities at the outset. It is highly likely that repayment of the capital cost of a bypass Delta water facility would be made through a fixed "capacity" charge, which would be independent of the volume of water transported through that facility from year-to-year.

Page 96, Paragraph 2

This paragraph suggests that there is a danger that the Central Valley Project and State Water Project would not operate to the water quality objectives that they currently must comply with if an isolated facility is built. This is unrealistic and alarmist. Whatever facility is recommended by the BDCP and presumably constructed, will simply be another element of the State Water Project, not an independent operation. As such, an isolated facility would

be operated in conjunction with the other elements of the water projects and would be similarly regulated by independent State and federal agencies to ensure compliance with existing and future water quality objectives.

Page 96, Paragraph 3

Concerning “a predicted $191 million crop loss under a tripling of south Delta salinity.” How likely is such a tripling of salinity in the south Delta? Alarmist statements from highly-unlikely hypothetical scenarios, such as this one, can be taken out of context from the DPC report to needlessly upset and worry Delta residents. This detracts from constructive discussion of the economic sustainability of the Delta; certainly does not inform the DSC; and could make it more difficult to attract new residents and investments to the Delta.

Page 96:

References to “Table 9” should read “Table 13.”

Page 96, Paragraph 3

Text says a change in EC objectives from the current 700 EC to the proposed 1000 EC would be a 42% increase in salinity over the 700 EC objective and a 100% increase over the 2006-2010 actual salinity averages. The text suggests that in similar years the isolated facility would operate to maintain actual salinity levels exactly at the proposed 1000 EC Delta-wide and this would then be a 100% increase over salinity that would exist absent the isolated facility, resulting in a $100 million loss to agricultural revenue. This is not valid. The salinity objective established by the State Water Resources Control Board is determined by the most salt-sensitive crop grown in the Delta—beans. The EC value has been determined to provide full yields for these most salt-sensitive crops when best-management is practiced by farmers. If the SWP with the isolated facility is operated to meet this objective, then water quality conditions in the Delta would be adequate to allow full crops yields for all crops grown in the Delta and no loss of revenue would occur at all.

Page 96, Paragraph 4

Concerning, “The scenario in Table 9 discussed above measures the potential impacts from the predicted levels of future crop production.” Table 9 shows estimated Delta crop revenue in 2009. It has nothing to do with “future crop production.” Is there a typo here?

Page 96, Paragraph 5

Concerning “…average about $2,000 per acre in revenue.” This should be changed to “…average about $2,000 per acre per year in gross revenue.”

Page 97, Paragraph 1

Concerning, “… a conservative estimate of revenue losses in a range between $20 million and $65 million from salinity plus $10 to $15 million from land consumption is a reasonable estimate for discussion.” This range of loss estimates does not appear to be conservative. The upper ends of these ranges total more than the cited figure attributed to Dr. Howitt in 2007.

Page 97

Section 4.2 opens stating the impacts of four Conservation Measures will be addressed and Table 14 includes those four measures (CMs 2, 3, 4 and 6). However, Section 4.2.4 addresses Conservation Measure 5. Recommend opening of Section 4.2 be corrected.
It appears that the authors of the draft report are falsely assuming that under the five major conservation measures proposed by the BDCP, all the farmed acres in some-to-all of nine BDCP Conservation Zones would be converted to wildlife habitat or else potentially acquired through fee-title or conservation and flood easements.

As a participant in the development of the BDCP, DWR does not envision all, or even most, of the farmlands in those nine regions being bought or put under “conservation and flood easements.” Instead, the land or development rights for some of the farmland in those regions would be purchased from willing sellers to further the conservation aims of the BDCP. It is possible that certain circumstances would lead to a landowner selling farmland producing high-value crops. However, it is more likely only the less-valuable, less-productive farmland in each of the target areas would be purchased or enrolled in these

programs. As such, the negative economic impacts of converting some Delta farmland to wildlife habitat or wildlife-friendly farming practices would be minimized.

Yet based upon the high values shown in Tables 14 through 17, it appears that the "multinomial logit model" was not run in such a manner as to minimize the loss of gross crop revenue resulting from "the acquisition of 32,000 acres in "wildlife friendly" agricultural easements" in the Delta.

Also, it is unlikely that such easements would be bought for lands producing average annual gross revenues of either $3,000/acre or $23,378/acre [from Table 15 on Page 99]. The August draft Delta ESP may thus substantially overstate the crop revenue losses which would occur due to the implementation of the BDCP's "CM3" conservation easements. It may also overstate revenue losses due to some of the other BDCP-proposed conservation measures.

For instance, Table 16, at the top of Page 101, shows acreages for four "BDCP Restoration Opportunity Areas" totaling 65,195 acres of farmland in 2010. From all that land, there is a goal or "minimum restoration target" of eventual conversion to wildlife habitat of only 13,600 acres of farmland. Yet the Table 16 has an estimate of $2,014/acre average annual gross crop revenue for the 13,600 acres of farmland. That $2,014/acre/year value appears to be far too high, due to all the lower-value agriculture in the largest of those areas – the Cache Slough Complex.

Page 102, Table 17

Contains a significant mathematical error. According to the bottom row of that table, the five Delta islands that the DPC report claims would be flooded under one BDCP "flood control scenario" contain 10,395 acres, producing $8,442,813 in gross crop revenue in 2009, for an average 2009 revenue per acre of $969/acre. I used a calculator to determine that $8,442,813 in gross revenue from 10,395 acres produces an average of only $812/acre, not the $969/acre claimed by Table 17.

Page 102, Table 17

The benefits of the islands should be compared to the costs of maintaining levees. Consider adding a column showing the annual levee maintenance costs.

Page 102-103

Section 5.1, Animal Production in the Delta, at the bottom of Page 102 and top of Page 103: The estimate given here for the value of the "Animal Output in the Delta" in an unspecified recent year - $93.4 million – is well below the Delta Agriculture Valuation Model's (DAVM) estimate of $160.3 million for the average annual output of the Delta's animal agriculture during the 2005-09 period, expressed in 2009 dollars. (That estimate is based largely on data from recent County Crop Reports, an interview with a representative of the Delta's dairy industry, and a close examination of recent maps and aerial photos.) However, if the draft report's Table 18 estimate is for 2009, then that estimate may not be contradicted by the DAVM's estimate for the 2005-09 period, because farmgate milk and beef prices in California in 2009 were well below the levels of recent years.

Page 103, next-to-last paragraph

Concerning the statement, "Thus, to be conservative, dairy production outside the Legal Delta was not attributed to Delta agriculture." This is being too conservative. An interview with a Delta diary representative, plus an analysis of data gathered for DWR's 2007 Land Use Survey of the Delta, revealed that there were a significant number of dairies located just outside the Legal Delta which relied heavily upon irrigated pastures and fields of corn silage, plus grain and alfalfa silage, located nearby within the Delta. A modest proportion of the dairy output from parts of some of the six Delta counties which lie outside the Delta can be considered to be heavily-dependent upon the output of Delta cropland.

Page 103, last paragraph

Concerning the statement, "However, two important regional industries can be strongly linked to local production: fruit and vegetable canning and pickling, and wineries. These local industries are heavily supported by the Delta's two highest value crops, processing tomatoes and wine grapes."

Most regional canneries and wineries are not "strongly linked to local [Delta] production." If they cannot purchase as many grapes or tomatoes from Delta growers as they have in past years, there are plenty of farmers and acres growing grapes or tomatoes in nearby regions from which to make purchases to offset most-to-all of the lost Delta production. The "Napa and Modesto" wineries mentioned in this paragraph should be able to replace much of any lost Delta grape production with the same or similar types of grapes from growing regions near the Delta, or near Napa and Modesto.

For instance, according to the Delta Agricultural Valuation Model, during the 2005-to-2009 period, only about 21 percent of the harvested wine grape acreage in the six counties which contain the Delta was actually located within the legal Delta. The corresponding figure for processing tomatoes is about 32 percent.

To include in the valuation of Delta agriculture all of the high-value output of wineries and canneries within the six counties which contain the Delta is to inflate the true value of Delta agricultural production, and its multiplied economic impact. To also include some of the value of "Napa and Modesto" wineries in a valuation of Delta agriculture is to further inflate the true economic value of Delta agriculture.

Page 104, Paragraph 2

Concerning, "The IMPLAN 3 model calibrated to 2008 regional and statewide economic data was used to estimate the overall economic impact of Delta agriculture."

This calibration to 2008 presents a problem, for the above data gathered on Delta agriculture is claimed to be for 2009 or 2010.

Concerning, "See the Appendix E for a description of the IMPLAN model …" There was no description of IMPLAN in Appendix E to the August 9 DPC report downloaded from the DPC Website.

Concerning, "… a methodology that recently yielded accurate predictions of the employment effects of the 2009 drought in the San Joaquin Valley." This is an unsupported claim.

Page 104, Paragraph 3

Concerning, "For the five county economic impact model, Delta agricultural production, and Delta-dependent food processing and winery production was distributed across IMPLAN production sectors …" The DPC report includes far too much "food processing and winery production" that does not really depend on Delta production. So the IMPLAN-modeled economic impacts are significantly inflated.

Concerning, "Table 21 shows that across all of California, the economic impact of Delta agriculture is 12,360 jobs, $761 million in value added, and $1.5 billion in output without including upward linkages to canneries and wineries." The basic fallacy with this argument

is that it assumes that the companies and individuals that purchase the raw agricultural output of the Delta would be unable to replace lost Delta production with purchases of farm and dairy output from outside the Delta. This is clearly not the situation that exists in the real world. Delta agriculture is not unique and irreplaceable. For only one of the "Top 20 Delta Crops by Value" listed in Table 10 of the draft report can it be said that a large drop in Delta production of that crop could not effectively and efficiently be replaced over time by increased production of that crop elsewhere in the region. And that one crop whose Delta production is not easily replaceable is asparagus, whose acreage has been in a sharp decline in both the Delta and the state for the past ten years, due largely to falling worldwide demand for California-grown asparagus.

To put this issue in perspective, consider the history of agriculture in Santa Clara County:

Known at one time as the "Valley of Heart's Delight," Santa Clara Valley once overflowed with abundant agricultural riches. … The Valley's fertile soil provided perfect conditions for agriculture. In the 1850's grain crops flourished, followed by orchards of prunes, apricots, peaches and pears. Acres of prized vineyards covered the Valley. Fruit processing developed into a major local industry and remained vital to the economy throughout the 1940's and 1950's."[4]

As recently as 1985, Santa Clara County still had 45,379 irrigated harvested acres, according to my analysis of the county's Crop Report for that year. By 2010, this figure had fallen almost 55 percent, to just 20,618 acres, according to my analysis of Santa Clara County's 2010 Crop Report. The acreage devoted to high-value truck and nursery crops actually increased slightly between 1985 and 2010, while the acreage in field crops and fruit and nut crops fell sharply, as agriculture in the Santa Clara Valley evolved in response to rising urbanization. Today, the region is known as "Silicon Valley." And Northern California agriculture has continued to expand and thrive, despite the loss of most of its Santa Clara County acreage.

Page 104, last paragraph

Concerning, "To get a more complete picture of the full economic impact, the impact of locally linked food manufacturing in fruit and vegetable canning and wineries were included." As mentioned above, few of the region's fruit and vegetable canning companies or wineries are really dependent upon, or "locally-linked", to the Delta's fruit, vegetable, or wine grape

[4] From: http://www.sccgov.org/portal/site/scc/chlevel3?path=%2Fv7%2FSCC%20Public%20Portal%2FCounty%20Connection%2FAbout%20the%20County%2FHistory%20of%20the%20County

production. To include the multiplied economic impacts of the production of tomato canneries and wineries well outside the Delta in the economic impact of Delta agriculture is to greatly inflate that economic impact.

Concerning, "… the additional $541 million of Delta dependent winery production from adjacent counties was add to the totals." Far less than $541 million in wine production from wineries outside the six Delta counties is truly dependent on Delta wine grapes. The inclusion of outside-Delta agricultural processing contributes to the inflated estimate of the multiplied economic impact of Delta agriculture found in the last sentence of this paragraph, and displayed in many of the Tables that immediately follow Page 104.

Page 106, first paragraph after the tables

There is one other type of "alternative form of agriculture" that has potential to improve the sustainability of Delta agriculture. In the UC AIC report described in the last paragraph of Page 106, it is referred to as "Satisfying Local Demands for Local [Agricultural] Production." It should be included in any discussion of "alternative forms of agriculture" which hold promise to help strengthen, enrich, and transform Delta agriculture.

Page 106, last paragraph

Concerning, "In virtually all cases, the AIC report determined that the [alternative agriculture] ideas have very limited potential to develop a significant market in the Delta." This is not an accurate characterization of the findings or conclusions of the February 2011 UC AIC report, *Evaluations of Policy Alternatives to Benefit Agriculture in the Sacramento-San Joaquin Delta of California*, which was presented to the DSC. Pages 5 through 14 of that report contain a good discussion of the potential of various forms of "alternative agriculture" to benefit Delta agriculture.

Chapter 7 Recreation and Tourism

General comment – Strongly recommend including more information, recommendations, and references from DPR's 2011 ***Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh***, developed this year through a collaborative process and provided to both the DPC and DSC.

General comment – Strongly recommend referencing additional prior Delta recreation surveys and planning reports, including the following:

Sacramento-San Joaquin Delta Outdoor Recreation Survey, DWR 1980, 324 pages
Delta Master Recreation Plan, DWR 1976
Sacramento-San Joaquin Delta Recreation Concept Plan, DWR 1981, 296 pages
Delta Outdoor Recreation Implementation Plan, DWR 1981, 221 pages
Recreation Facilities Plan for North & South Delta, USBR, 1988
North Delta Recreation Use Survey, DWR 1997

These reports include useful historical data as well as provide models for developing future recreation surveys and plans.

Page 108, line 2

What is meant by "Nearby residents visit virtually every day, …"? Same phrase used on page 110, line 6.

Page 108, 4th Bullet –

Who estimates 12 million activity days per year? Based on the methodology described later in the chapter, the very large uncertainty associated with this estimate should be acknowledged in this summary.

Page 108, 6th Bullet –

Other principle changes and trends include the potential effects on fishing, boating, and other recreation of:

- increased gas prices on boating costs,
- continuation of the observed trend for increased summer afternoon wind speeds through the Carquinez Straits as a result of increased Central Valley temperatures,
- continued subsidence on levees and islands,
- continued sea level rise on marinas, levees, and islands
- continued changes in the food chain caused by invasive filter feeders on fish species and abundance
- boating restrictions to prevent spread of invasive Quagga mussels (should also be mentioned on page 118)

Additional issues are listed at the bottom of page 120 but neglected in this section.

Page 108, 7th Bullet –

Based on the methodology described later in the chapter, the extremely large uncertainty associated with these economic estimates should be acknowledged in this summary.

Page 109, 1st Bullet

Recommend discussing the Discover the Delta Foundation.

Page 109, 2nd Bullet

Who forecasts these visitation increases? Based on what assumptions?

Page 109, Paragraph 6, Lines 3-4

The ESP incorrectly refers to the Delta as having about 60 islands. There are hundreds of islands in the Delta, mostly small in-channel islands without levees. In the Sacramento-San Joaquin Delta alone, there are about forty distinct islands with one or more Reclamation Districts with levees completely surrounded by waterways and dozens of tracts with levees that are mostly surrounded by waterways.

Page 119, Paragraph 4, Line 6

The ESP should note that water quality (e.g. turbidity levels, salinity) best suited for native fish species may conflict with water quality best suited for other beneficial uses, such as boater recreation.

Page 120, Paragraph 6

See the list of other issues affecting recreation listed above for page 108, line 22.

Section 3.4.1

Applying boating recreational data to non-boating activities in the Delta is technically questionable. Whereas boating activities are a strong draw to the Delta, it is difficult to

imagine people in the “market area” being as strongly drawn to the Delta for activities which have competing and popular recreational areas available.

Page 125, line 1

Several historical DWR recreation surveys are ignored – see general comment for Chapter 7 above.

Chapter 7, Section 3.4.5

General comment – These extremely rough estimates should include error bounds, and should be compared to additional extrapolations of observed historical data for specific parks and activities. See prior comments about historical recreation surveys. The characterization of these educated guesses in Chapter 7, Section 1 as “conservatively estimated” is not justified by the methodology presented in this section.

Chapter 7, Section 3.4.6

General comment – The modeled recreation usage ranges are based on a series of assumptions described in Appendix F. Several of these assumptions are extremely uncertain, but errors in those assumptions are not included in the range presented: the assumption about the size of the ‘market area’, the assumption that that statewide participation ranges apply to this area, the unexplained “professional judgment” used to estimate capture rates for the Delta, and the assumptions about annual days of participation. The ranges presented do not represent the combined errors in this analysis.

Chapter 7, Section 3.5.1

General comment – Combining boating, fishing, and camping in these economic estimates is problematic and probably contributes considerable uncertainty to these results. The methodology should be more thoroughly explained.

General comment – It appears that these economic estimates use the medium visitation estimate described in the prior section without acknowledging the range or the additional uncertainty described in the comment for Section 3.4.6. If so, the true range of economic impacts is probably much broader and more uncertain than presented.

Chapter 7, Section 3.7

General comment – See above comments about the uncertainty of visitation and economic estimates. The uncertainty associated with these very rough estimates should be acknowledged.

General comment – Present use is also limited by limited facilities with access for disabled people and families with children.

Page 136, Paragraph 2

There is no section 3.2.4.1, reference needs to be corrected.

Page 136, Paragraph 2

A longer period and more than four data points in figure 29 would be informative. Attributing the recent decline only to the “great recession’ ignores the effects of gas price increases on motorized boating.

Page 137, Last Paragraph – See comment for page 108, line 22 regarding other trends.

Chapter 7, Section 4.1.1.6

Fog is another major concern that causes many boating accidents in the Delta.

Chapter 7, Sections 4.5 & 4.6

General comment – The very large uncertainties associated with these projections should be either quantified or qualitatively described.

Chapter 8: Infrastructure

Concerning, “Chapter 8: Infrastructure”, which starts on Page 159

This section starts with the statement, “There are basically two kinds of infrastructure in the Delta: the kind that adds to the economic sustainability of the Delta and the kind that is just passing through.” This statement reveals that the DPC report’s authors have a different understanding of the term “infrastructure” than is possessed by most economists. The *Encyclopedia of Economics*[5] defines the term as follows:

> Infrastructure refers to those economic activities which enhance, directly or indirectly, output levels or efficiency in production. Essential elements are systems of transportation, power generation, communications and banking, educational and health facilities, and a well-ordered government and political structure.

“[J]ust passing through” is not a valid infrastructure category.

Page 159, Paragraph 5

Concerning, “Maintenance of the levee system in order to protect transportation and energy infrastructure is crucial.” Several recent reports have concluded that merely maintaining the Delta’s levees will not be enough to ensure their long-term survival in the face of sea-level rise, continued subsidence, global climate change, and seismic risk. Those levees must either be improved, or the infrastructure they protect should be “hardened”, so as to be able to survive widespread Delta flooding.

Page 167, last paragraph

Concerning, “…increasing open water in the Delta, is not natural …”. If an increase in open water in the Delta were to occur from natural forces, such as sea-level rise, or the failure of Delta levees due to seismic action or a major flood, would that be considered natural?

Page 168, last paragraph

Two important chapters in the July 21 draft of this report appear to have been removed from the August 9 draft report done for the DPC: Chapter 9: Other Economic Sectors and Chapter 10, Local Government Services in the Delta.

[5] McGraw-Hill, 1982, Page 523.

Chapter 9: Legacy Communities

Page 169, Paragraph 1

This paragraph contains the following statements concerning the Delta's "Legacy Communities":

> … demographic, economic, and land-use trends have changed these communities considerably — some to the extent that visible signs of underutilization and physical deterioration are prevalent. Despite the trends that suggest otherwise, there is great potential for revitalization of the Delta's Legacy Communities.

These statements are presented as fact without any support being provided. Details should be given, and documents should be cited or authorities quoted to support these statements. What exactly are the prevalent "visible signs of underutilization and physical deterioration"? What trends suggest that there is little potential for a "revitalization of the Delta's Legacy Communities"?

Page 170, last paragraph

Concerning, "Only about one in ten employees working in the Primary Zone also lives there." The source for this statement should be identified.

Also, concerning "Delta employers must recruit non-local employees who must drive long distances to work": This statement appears to contradict the draft report's claim that many of those who work in the Delta's Primary Zone live in nearby communities in the Secondary Zone, and thus only have a short distance to travel to work.

Chapter 9

Chapter 9 contains many helpful suggestions and recommendations for economic development in the Delta's Legacy Communities and the nearby agricultural lands which support those communities. However, one important recommendation is missing: develop the potential of these communities and farmlands to "Satisfying Local Demands for Local [Agricultural] Production", as the recent UC AIC report for the DSC describes it. The rapid rise of the "locavore movement' in the San Francisco Bay and Sacramento areas, if exploited by the communities and farmers of the Delta, has the promise to transform the Delta in a positive and sustainable way, by promoting economic development while retaining

the vibrant agricultural character of much of the Delta. The DPC report should discuss this movement, and how the Delta's residents can exploit it.

Chapter 10: Key Findings and Recommendations

Some of the material in this chapter appears to be redundant, summarizing or restating what appears elsewhere in this report. As such, the comments on earlier chapters in the draft report apply.

Chapter 11: Recommended Strategies and Policies for Economic Sustainability

Much of this chapter simply repeats or summarizes what is written earlier in this DPC report and to which our earlier comments apply.

Page 218, Paragraph 2

The statement that there is a "legislative requirement to "restore and enhance" the Delta" is an over-simplification that leads to an incorrect interpretation of the legislation. The California Water Code states:

> Coequal goals means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. (Water Code section 85054)

The key term here is "as an evolving place." The California Delta will continue to change and evolve, in response to strong social, economic, and natural forces.

Page 220, Paragraph 1

Concerning, "Thus, economic sustainability requires the value of Delta agriculture to be sustained and enhanced in the future." This statement reflects an incorrect understanding of "economic sustainability." The real, inflation-adjusted value of Delta agriculture is likely to fluctuate, but generally decrease, over the next 20 years, due largely to powerful social, economic, and natural forces beyond the control of Delta residents and State or local governments.

Page 221, Paragraph 2

Concerning, “The aging and occasionally sub-standard building stock [of the Delta’s Legacy Communities] needs improvement, potentially utilizing redevelopment of existing buildings and/or a limited amount of new development in order to accommodate visitor- and local-serving enterprises. New investment is especially important because the existing base of hospitality- and tourism-related enterprises is very limited and insufficient to attract and capture significant tourist activity.” This rather bleak portrayal of the Delta’s Legacy Communities and the Delta’s “hospitality- and tourism-related enterprises” stands in contrast to much more positive and upbeat portrayals of those communities and enterprises found elsewhere in the DPC report.

Page 221, Paragraph 3

Concerning, “An already burdensome regulatory environment …” The DPC report has not established that there is a “burdensome regulatory environment” weighing heavy upon the residents and businesses of the Delta. Although the DPC is charged with enforcing various land use regulations in the Delta, those regulations are designed to protect the Delta and its residents.

Page 221, Paragraph 4

Concerning, “Chapter 11 includes more detailed visions and strategies for Legacy Communities …” This paragraph is located in Chapter 11. Chapter 9 deals with Legacy Communities. Is there a typo here?

Page 222, Bullet 2

Concerning, “The Delta Protection Commission should consider taking on this [emergency management and response] role.” We believe this important role is best left to DWR and CalEMA.

Page 222, Bullet 3

Concerning, "… if current trends [in the Delta] towards higher value crops continue." Current trends in the Delta are away from higher-valued truck, tree and vine crops, and towards lower-valued field crops.

Page 222, Bullets 4 and 5:

- "Initiate a process to streamline local, State, and federal regulations and permitting. Overlapping layers of regulatory oversight in the Delta create uncertainty and costs that discourage private investment needed for economic sustainability.
- The Delta Stewardship Council should not increase regulation of "covered actions" for industries it is trying to enhance in the Delta. Exemptions should be made for needed investments in agriculture, recreation, and tourism."

The Draft Plan and other recent reports concerning the Delta make it clear that there are many serious conditions or obstacles, besides too much government regulation, that hinder sustainable economic development in the Delta. The DPC is not the enemy of the Delta. The regulations that the DPC enforces are designed to protect the Delta, not stifle it, or cause its economic decline. Such regulations may need to be simplified, revised or updated. But they do not need to be gutted or ignored, so as to try to promote economic growth in the Delta.

Also, in order to protect the Delta, its residents, and its ecosystem, the DSC has been charged by law with regulating certain "covered actions" related to the Delta. Exempting certain favored industries or companies from such regulation is not appropriate, and may not be legal.

Finally, it is beyond the power of the DPC, DSC, or any State agency to "streamline federal regulations."

Page 223, Bullet 1

This conclusion regarding increasing freshwater outflow is premature. California Water Code (CWC) 85086 requires the State Water Resource Control Board (State Board) to develop flow criteria within nine months of enactment of the Sacramento-San Joaquin Delta Reform Act of 2009. The fifth draft Delta Plan proposes this deadline be extended to 2014. CWC 85086 requires the State Board to use best available science to develop flow criteria

that considers the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions. Prior to the State Board's development of this new criteria, it is uncertain whether increased outflow is beneficial to the co-equal goals described in the Sacramento-San Joaquin Delta Reform Act of 2009.

Page 223, Bullet 2

The conclusion that an isolated water conveyance facility is inconsistent with economic sustainability is unsubstantiated.

Concerning, "A 15,000 cubic feet per second isolated water conveyance facility is inconsistent with economic sustainability. This project would have significant negative effects on all aspects of the Delta economy." These statements are speculative and not based upon valid technical analyses. In addition to the comments we have made on the body and appendices of the draft report regarding unsupported conclusions, invalid or ambiguous analyses and assumptions, we wish to point out that the draft report completely ignores the potential positive economic effects of the proposed facility. These effects include the temporary infusion of jobs and revenues related to construction; and the longer-term effect of jobs related to facility operation and maintenance, and the availability to Delta landowners of funds from the sale of a portion of their lands for re-investment in their agricultural operations.

Page 223, Bullet 3

Concerning, "Tidal marsh in the south Delta eliminates a large amount of high-value agricultural land …" Additional tidal marsh in the south Delta can be created on marginal farmland, now growing lower-valued crops.

Page 223, Bullet 4

The conclusion that a large body of open water in the Central Delta is inconsistent with economic sustainability is unsubstantiated. The Draft Plan states that there are negative impacts to recreation and water quality, but does not quantify these impacts and does not compare these costs to the costs of maintaining the islands. Should a levee fail, the costs of pumping out the water in a flooded island are large. The costs of pumping out and restoring these islands should be compared to their economic value (including the quantified value to recreation and water quality).

Appendix D

Page D2, Paragraph 1, lines 3-6

"By comparison, Suddeth et al. (2008) cited a cost of $45m per mile from the DRMS Preliminary Strategies Report."

Comment

The authors are not citing DRMS directly or correctly. The cost per mile to upgrade selected Delta levees to PL 84-99 (Class 3), as shown in the DRMS Phase 2 Report, is $1.8 million on average. The cost per mile to upgrade selected Delta levees to Urban Project Levees (Class 5), as shown in the DRMS Phase 2 Report, is $4.9 million on average.

Page D2, Paragraph 1, lines 3-6

"Although the DRMS report refers to a large number of soil borings that have been conducted, most of these are older borings that have little value with respect to engineering properties because insufficient testing was carried out."

Comment

The authors do not offer any scientific evidence to support their statement. It is important to emphasize that methods and data used in the DRMS analysis were reviewed by well known experts in the fields of geotechnical, civil and seismic.

Page D3, Paragraph 1, lines 1-3

"High water elevations resulting from tides and floods can also be seen days or weeks in advance so that appropriate emergency measures can be taken. The probabilities of failure due to overtopping that are calculated in DRMS appear to be inconsistent with these realities."

Comment

The authors do not offer any scientific evidence to support their statement regarding high water elevations being detected days or weeks in advance. Furthermore, the authors contend that probabilities of failure calculated in DRMS **appear** to be inconsistent with these **realities.** DRMS study was based on scientific data and rigorous analysis reviewed by well-known experts. Authors' claims are not based on any scientific evidence.

Page D5, Paragraph 1 lines 1-3

"As with floods and earthquakes, the real risk of "sunny-day" failures also appears to have been much exaggerated. Again, the Flood Risk White Paper prepared for the Delta Stewardship Council perpetuates myths generated by DRMS and others. The

White Paper cites numbers from DRMS in spite of the fact that the IRP cautioned against taking DRMS numbers at face value."

Comment

The authors refer to "…myths perpetuated by DRMS…" This assessment lacks scientific, ethical and professional judgment. Furthermore, the authors misrepresent IRP's assessments made in their final review of DRMS, by taking certain phrases out of context.

Page D2, 1st paragraph, lines 1-9

"Because of their location in the Delta and their history of construction, Delta levees have rather variable foundation conditions and composition. This makes it difficult and expensive to conduct detailed geotechnical engineering investigations and analyses. Although the DRMS Phase 1 report refers to a large number of soil borings that have been conducted, most of these are older borings that have limited value with respect to engineering properties because insufficient testing was carried out. While the lack of hard engineering data on the properties of the levees is problematic, the levee system has, in fact, been proof loaded for 100 years or more. The "observational method" is a well-recognized procedure in geotechnical engineering and is particularly applicable to uncertain foundation condition and variable material properties."

Comment

The scope of work for the DRMS study was to use existing information. Data from several hundred borings were used in the analysis and stakeholders reviewed and accepted the validity of the borings data. Despite what the authors claim, no new testing was carried out. In addition, the authors clearly claim that the "observational method" somehow provides better results than actual boring data. This claim is highly frivolous and cannot be substantiated.

Page D3, 1st paragraph, lines 8-10

"The probabilities of failure due to overtopping that are calculated in DRMS appear to be inconsistent with these realities.."

Comment

Authors do not provide any scientific support for their contention. Authors deliberately disregard the scientifically proven fact that the probability of a large seismic event in the Delta region increases over time.

Appendix E

1) Please add the years represented by the crop data.
2) In Table E1, beans are not included in the list of Solano County crops but in Table E2, lima beans are listed as one of the major sources of crop revenue in Solano County.

3) In Table E1 and Table E2, the totals in the Four Counties columns appear to have inaccurate summations. A lot of the totals reported do not match up with hand calculation when adding up the crop type and values totals in the counties columns. For example, in Table E1, Cherry acreage is reported to be a total of 2,415. Adding up the individual county totals (Sacramento: 1,286 and San Joaquin: 334) gives a total of 1,620.
4) In Table E1, the crop that south Delta salinity objectives are based upon (beans, dried), is only 0.01 percent of the total crops in the Delta, and is only listed as being grown in San Joaquin County. If beans are a cash crop, why aren't they listed in Sacramento and Yolo counties since water quality is more likely to be better for their production? Seems odd to me, unless it's a plot to ensure some beans are planted there to ensure it's the basis for lower WQ objectives.
5) In Table E4, Detailed Salinity Data Summary Statistics, only the last five years of data was used when decades of data are available for a statistical analysis. This seems to fall short of a "Detailed" analysis.
6) In Table E4, Table shows EC statistics but does not identify the units of measure or define the period over which the average is calculated. Is the period May-August (per text Page 93. Section 4.1.1, Paragraph 1)? Both the units and period should be included in Table E4.